SIEMENS

PATENT
Attorney Docket No. 2003P03809US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Inventor:	W. Bauer et al.	)	
		)	Group Art Unit: 2616
Serial No.:	10/800,209	)	
		)	Examiner: Mattis, Jason E
Filed:	March 12, 2004	)	Confirmation No. 8567

Title: A METHOD AND A JITTER BUFFER REGULATING CIRCUIT FOR REGULATING A JITTER BUFFER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

DECLARATION OF WOLFGANG BAUER
UNDER 37 CFR 1.132

1. I, Wolfgang Bauer, a citizen of Austria, hereby declare and state as follows:

2. I have been continuously employed by Siemens Aktiengesellschaft Österreich., since December 1st, 1998. Siemens Aktiengesellschaft Österreich., is a corporate affiliate of the Assignee Siemens Aktiengesellschaft. I primarily work in the area of digital signal processing, in particular I develop digital signal processing algorithms and software for voice over IP gateways.

From 1990 to 1998 I have worked on a number of projects in the field of digital signal processing for several companies.

3. I received a diploma (equivalent to a Master of Science in the US) in Electronics, Communications and Information Technology from the Technical University of Vienna, Austria, on March 6th 1998.

4. I understand that the USPTO Examiner has rejected claims for the above-identified application relying on US patent application No. 2003/0112758 (hereinafter Pang).

5. I have read the specification of the Pang reference and understand the contents of such specification. Furthermore, I have read the patent application of the present invention and understand its contents.

6. Pang describes in paragraphs 55-57 (reproduced below in their entirety) a first approach for determining packet delays that uses a single weighting factor alpha (α).

[0055] To construct a histogram for determining the buffer size and delay, packet delays need to be determined. A plurality of methods may be used to calculate delay. In one approach, the jitter buffer system incorporates a method that uses a linear recursive filter and is characterized by the weighting factor alpha. The delay estimate is computed as:

$$d_i=\alpha*d_{i-1}+(1-\alpha)*n_i$$

[0056] And the variation is computed as:

$$v_i=\alpha v_{i-1}+(1-\alpha)|d_i-n_i|$$

[0057] where α is a weighting factor, d_i is the amount of time from when the ith packet is generated by the source until it is played out at the destination host, n_i is the total delay introduced by the network, and v_i is the variable delay experienced by packet i as it is sent from the source to the destination host.

[0058] A second approach adapts more quickly to the short burst of packets incurring long delays by using a weighting mechanism which incorporates two values into the weighting factor, one indicative of increasing trends in the delay and one indicative of decreasing trends.

[0059] if (n_i>d_i) then

$$d_i=\beta*d_i+(1-\beta)*n_i$$

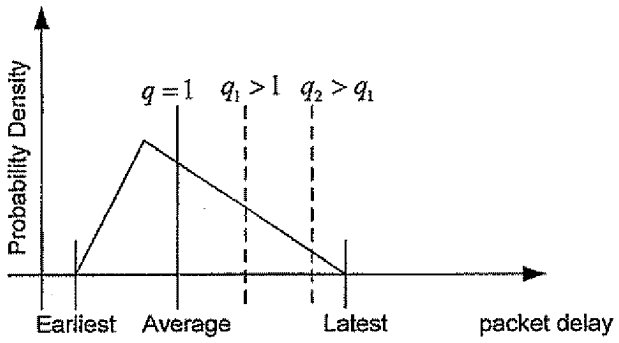
[0060] else

$$d_i=\alpha*d_i+(1-\alpha)*n_i$$

In paragraphs 58-59 (reproduced in the previous page in their entirety), Pang describes a second approach for determining packet delays that uses a first weighting factor alpha (α) and a second weighting factor (β). However, Pang does not teach how these two factors should be chosen, especially Pang does not mention any quotient $q = \alpha / \beta$ or suggests that this quotient is of any relevance. Consequently, one skilled in the art such as myself would appreciate that this approach of Pang also fails to describe or suggest an operational relationship where a quotient of the first predefined weight value and the second predefined weight value can be selected to define a tradeoff between a delay introduced by the jitter buffer (that is the average time packets stay in the jitter buffer before they are played out) and the packet loss due to packets arriving too late at the jitter buffer.

7. Moreover, one skilled in the art such as myself, would appreciate that selecting a quotient of the first predefined weight value and the second predefined weight value to define a tradeoff as described above is not a necessary and inevitable consequence from the disclosure of Pang. Consequently, the disclosure of Pang does not inherently teach or suggests to one skilled in the art, an operational relationship where a quotient of the first predefined weight value and the second predefined weight value is selected to define a tradeoff between the delay introduced by the jitter buffer and the packet loss rate, as set forth in the claimed invention.

8. As will be readily understood by one skilled in the art such as myself, the following figure shows in a straightforward manner the dependency of the delay estimation on the quotient $q = \frac{\alpha}{\beta}$, with $\alpha > \beta > 0$. For q=1, the estimation is near the arithmetic mean at the center of the probability density function (pdf). For increasing q, the estimate is shifted to the "end" of the pdf. If this estimate is used to setup the delay of a jitter buffer, virtually all packets with a higher delay are lost since they arrive too late for playout. Therefore, increasing q increases the delay estimate, resulting in a higher jitter buffer delay and reduced packet loss due to late packets and vice versa.



9. Accordingly, it is my opinion that Pang neither expressly nor inherently teaches or suggests an operational relationship where a quotient of the first predefined weight value and the second predefined weight value is selected to define a tradeoff between the delay introduced by the jitter buffer and the packet loss rate, as set forth in the claimed invention.

10. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or of any patent issuing there from.

Dated: May 7th, 2008 By: Wolfgang Bauer

Wolfgang Bauer